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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,681	10/16/2001	Shinji Yoshihara	15-015	3846

23400 7590 02/05/2003

LAW OFFICES OF DAVID G. POSZ
2000 L STREET, N.W.
SUITE 200
WASHINGTON, DC 20036

EXAMINER

BAUMEISTER, BRADLEY W

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 02/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/977,681

Applicant(s)
Yoshihara et al.

Examiner
B. William Baumeister

Art Unit
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Nov 27, 2002
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-8, 10, and 11 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-8 and 11 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Oct 16, 2001 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 6-8 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by George et al. '228. George discloses a rectangular diaphragm semiconductor chip comprising a substrate 11 that is preferably p-type (col. 2, line 35-); an n-type front-portion epilayer 14 having resistors (sensor elements) disposed on the front surface; and a heavily doped p-type region 12 extending along the entire p-n junction interface, thereby preventing p-n junction current leakage.

a. Regarding claim 7, the interior sides 24 of substrate 11 are sloped (e.g., col. 4, lines 15-). As such, the corners are "rounded" relative to if the walls formed 90 degree angles.

Allowable Subject Matter

3. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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4. The following is a statement of reasons for the indication of allowable subject matter: p-n junction substrate diaphragms were known. The anisotropic/isotropic etching method was known (see e.g., Applicant's prior art admissions in the Background Section of the specification and the foreign priority documents associated with Abe '670). Disposing the etch electrode in the scribe region was known (see e.g., JP '094). It was also known to provide p⁺ isolation regions at the p-n junction interface either (1) continuously along the entire p-n interface, including the side surfaces, or (2) discontinuously such that it is not present in the interior, thinned portion. However, a search of the relevant prior art failed to disclose or reasonably suggest such a diaphragm wherein a discontinuous p⁺ region is formed only at the periphery of the interface so as to extend to the side surfaces such that it is exposed. Restated, claim 10 would be allowable as no motivation was found to provide a peripheral P⁺ region that is both discontinuous (not present in the central thinned region) and present on the exposed surfaces of the sides.

Response to Arguments

5. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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- a. JP '679 discloses prior art diaphragm (FIG 6) having a p substrate 5; an n-front portion 7 and a p+ region 6 extending along the p-n junction interface.
- b. JP '094 discloses diaphragm chips that have the electrode (3) that was used for biasing the substrate during the electrochemical etch disposed in the scribe region for subsequent removal.
- c. Abe et al. '670 discloses (e.g., FIG 10) p-n junction diaphragms wherein the electrode (64) used for biasing the substrate during the electrochemical etch process is electrically connected to the lower p-type portion of the substrate (11) by p+ diffusion/isolation regions 63. While Abe may not constitute prior art, the associated foreign priority documents do constitute prior art.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

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will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

INFORMATION ON HOW TO CONTACT THE USPTO

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister**, at (703) 306-9165. The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'B. William Baumeister', with a stylized, looped flourish at the end.

B. William Baumeister

Patent Examiner, Art Unit 2815

January 29, 2003